

Advanced Metering Infrastructure

Overview and Financing Options

Presented to the

Springfield City Council

March 5, 2009



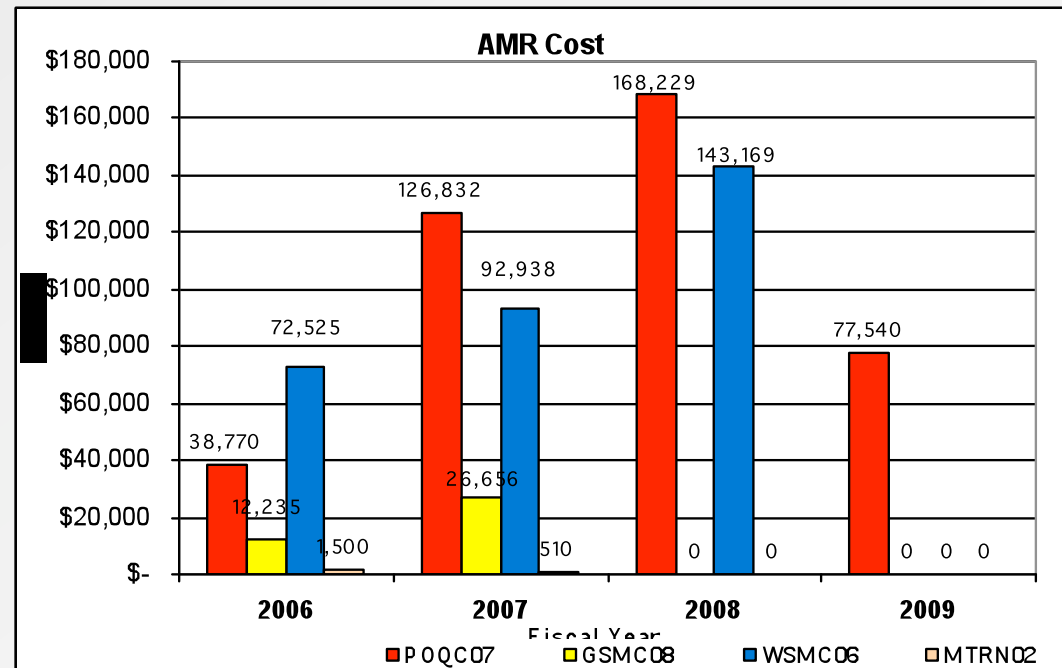
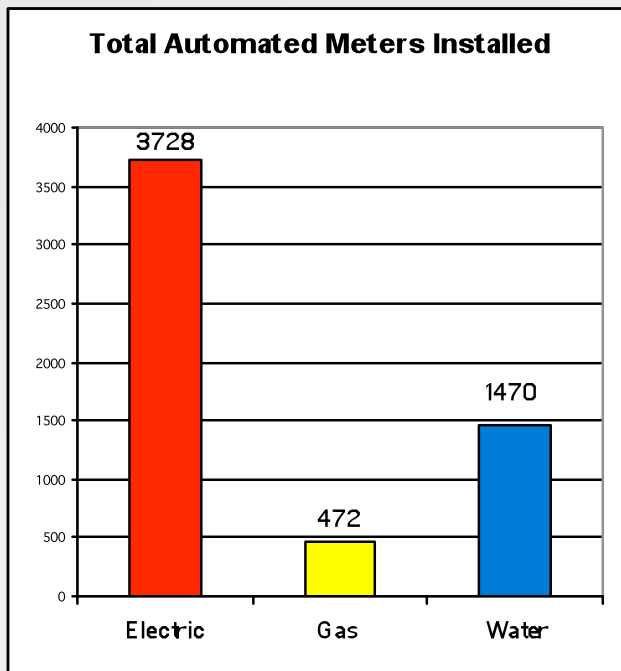
Advanced Metering Infrastructure

1. AMI and Smart Grid
2. Demand Response
3. Home Energy Displays
4. Financing



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Existing Installations



What Has Changed?

- AMR/AMI market has dramatically changed and matured since 2004.
- Many major companies are now installing.
- Recent Ice Storms highlighted additional benefits from an AMI system.
- Customer Expectations.
- National discussion on Smart Grid.
 - EISA 2007 PURPA Standards
 - American Recovery and Reinvestment Act



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What is Advanced Metering?

Advanced metering is a generic term referring to “smart” hardware and software for intelligently measuring, in detail, the consumption of electricity, natural gas or water.

The three functions that make a meter smart are:

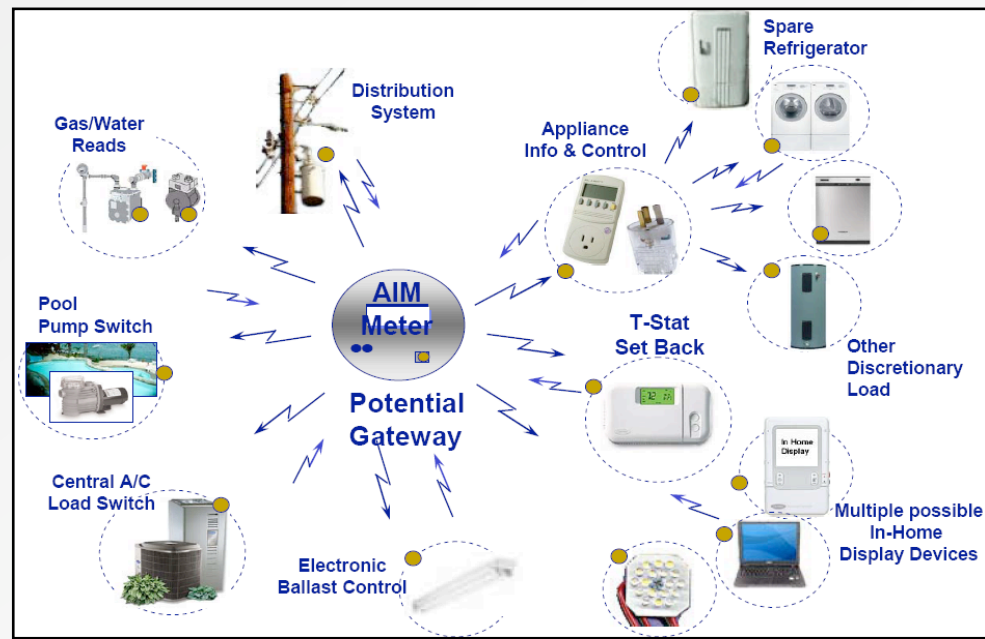
- The ability to take interval measurements, measuring both what was consumed and when it was consumed.
- Automatic transmission of the resulting data, eliminating the need for manual reading.
- Two-way communications: the ability to both “listen” and “talk.”



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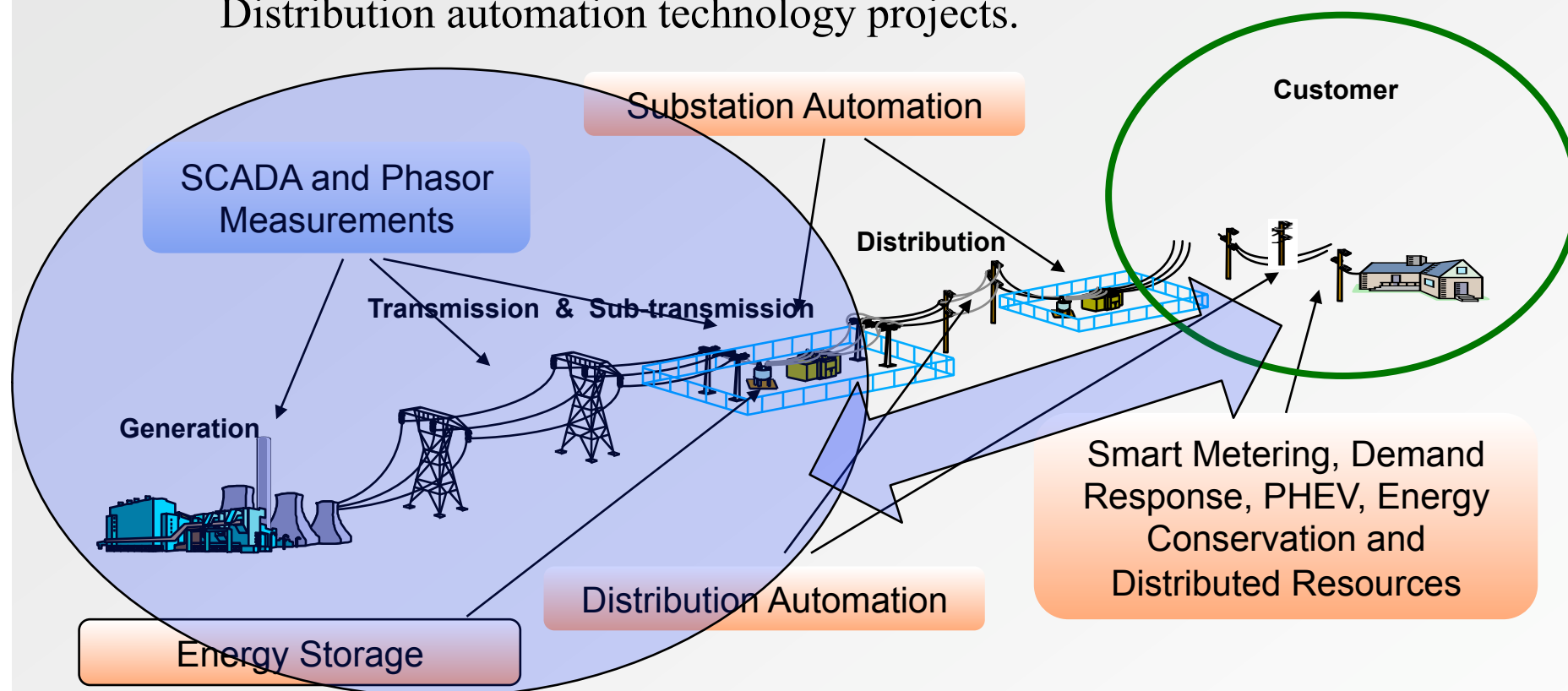
All meters measure end-user consumption, but advanced meters do much more. Advanced meters can:

- Accurately measure and control energy usage.
- Implement load control programs.
- Monitor power quality.
- Issue emergency or condition alerts.
- Provide maintenance diagnostics and economically integrate multiple building management systems.



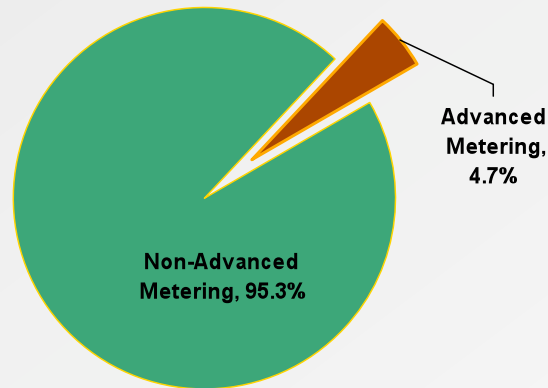
What is Smart Grid?

Smart Grid can include AMI but also includes other Transmission and Distribution automation technology projects.



How far along are utilities in implementing Advanced metering?

United States 2008 penetration of advanced metering



Source: 2008 FERC Survey

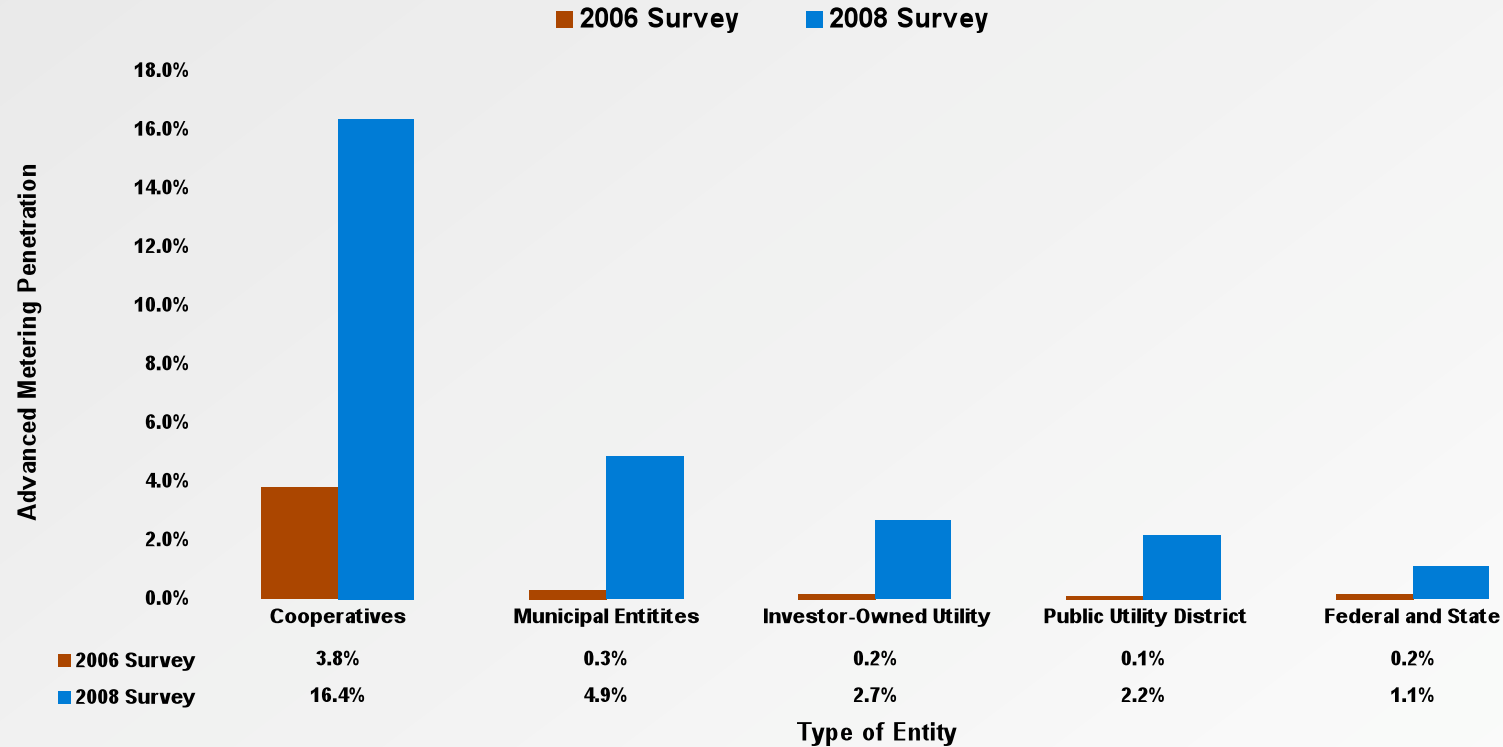
AMI meters: AMI-capable meters versus AMI in actual use

	AMI-capable	Actually being used for AMI	Total customer meters (AMI-capable, actual AMI, and all other meters)
2006	8,398,455	947,224	141,994,039
2008	unavailable	6,733,151	144,385,392

Source: 2006 FERC Survey and 2008 FERC Survey

How far along are utilities in implementing Advanced metering?

Penetration of Advanced Metering by type of entity

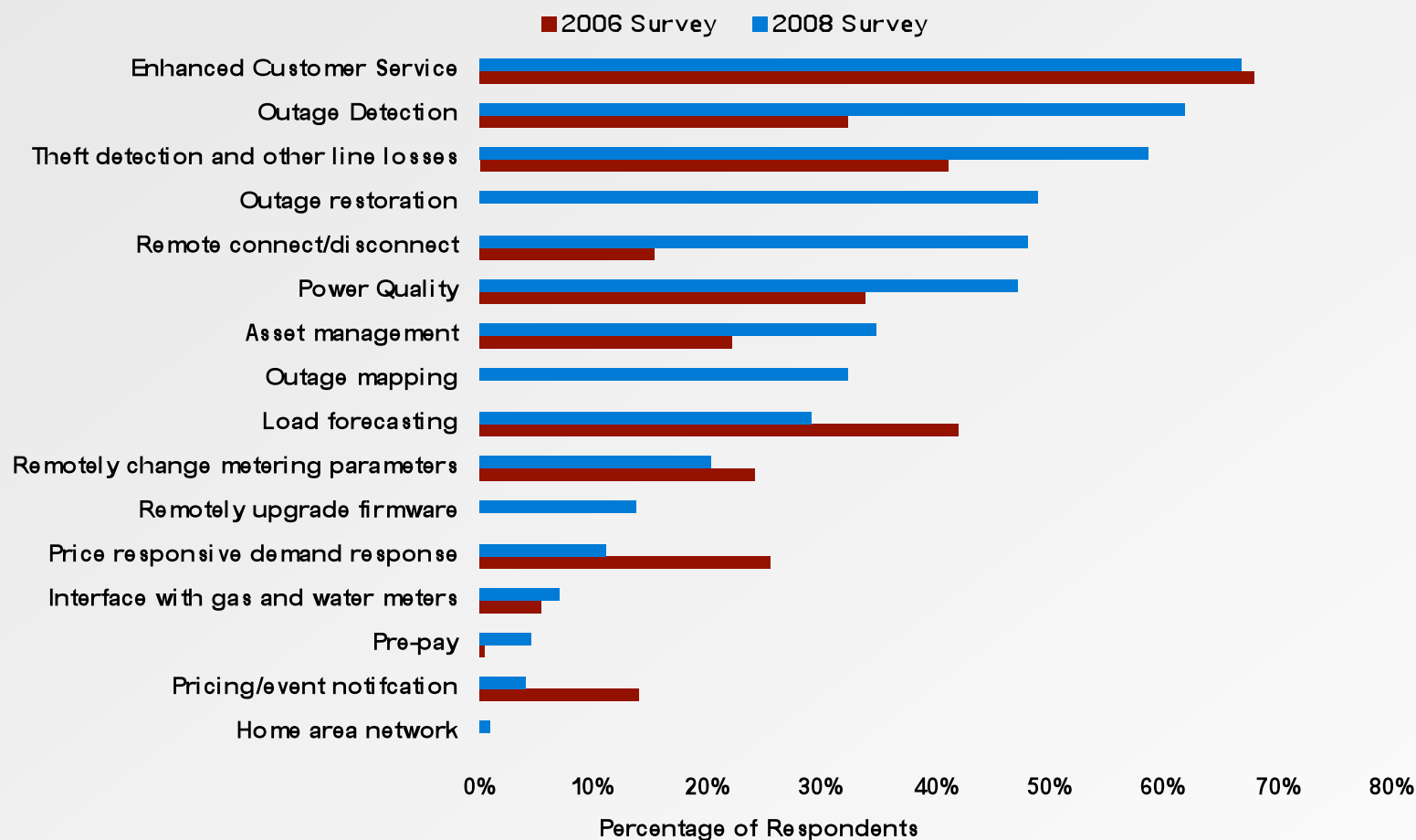


Source: 2006 FERC Survey and 2008 FERC Survey

What are the potential Benefits?



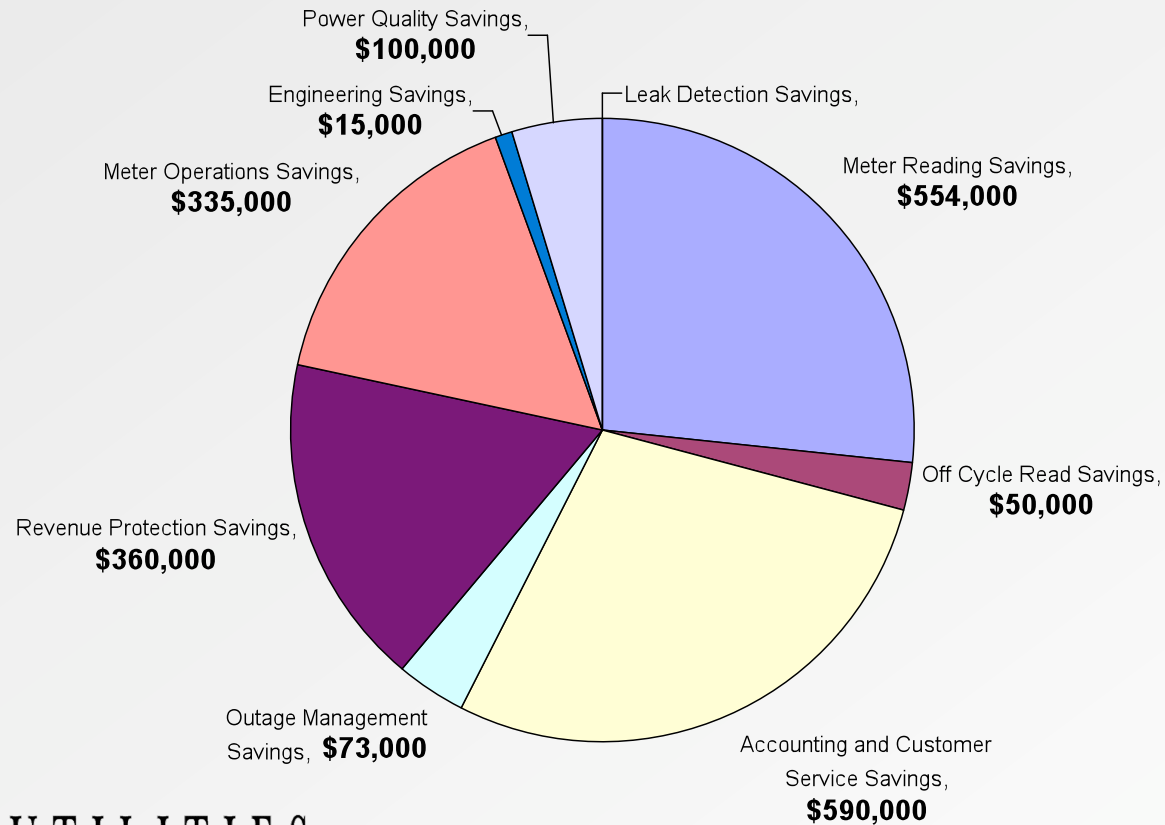
Reported Uses of Advanced Metering in 2006 and 2008



Source: 2006 FERC Survey and 2008 FERC Survey

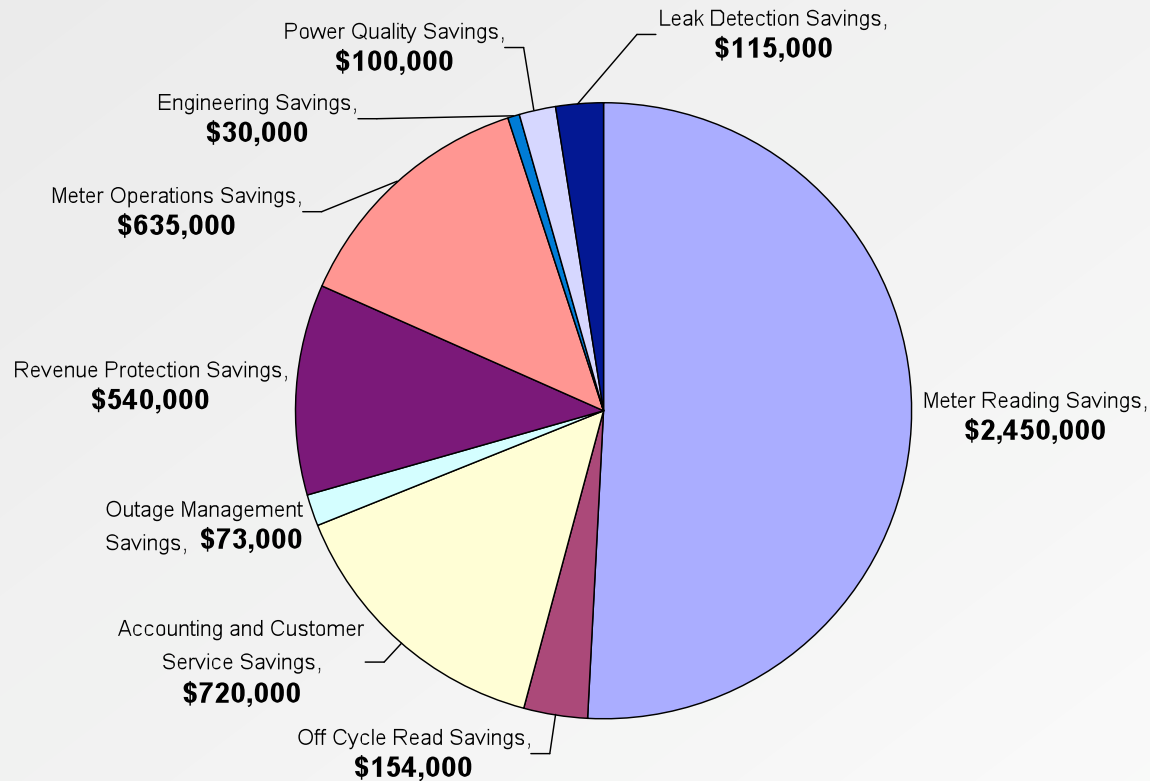
Expected CU Benefits

Electric Only AMI
(Estimated Annual Benefits \$2,077,000)



Expected CU Benefits

Electric, Natural Gas and Water AML
(Estimated Annual Benefits \$4,817,000)



Annual Savings

Electric AMI

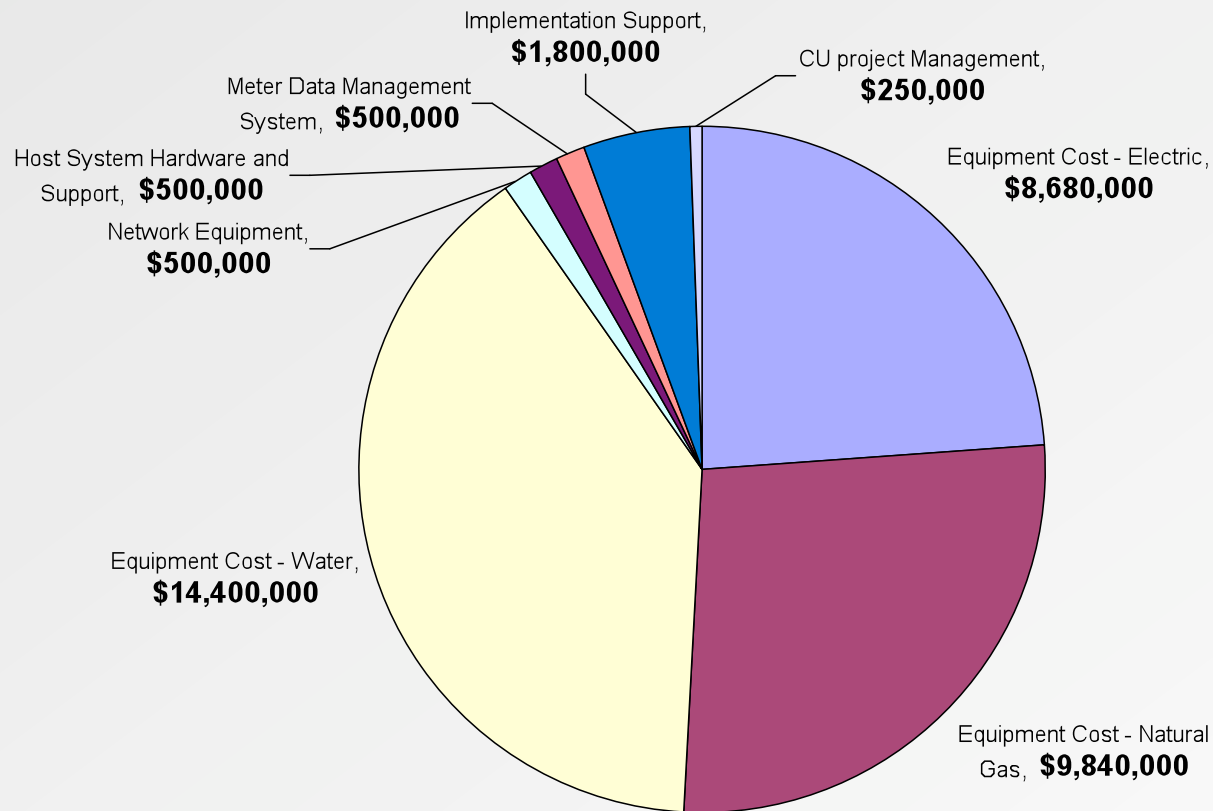
- CU Estimated Savings: \$2,077,000/year
- Industry Estimates \$2.3 to \$2.6 Million

Combined EGW AMI

- CU Estimated Savings: \$4,817,000/year
- Industry Estimates: \$4.8 to 6.6 Million

Combined AMI System Cost

(Total System Cost \$36,470,000)



Cost and Benefits

Estimated Implementation of 4 years

Assumed no benefits until 3rd year

Full benefits in 4th year

Simple payback: 6-8 years



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Demand Response Programs

- Demand Response Programs not included in previous costs or benefits.
- Demand Response Programs can be implemented more easily with an AMI system. However, Demand Response can be implemented independently or in advance of an AMI project.



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Home Energy Displays

- Home Energy Displays could be offered to help customers monitor and control their usage.
- Some feel that customers will conserve if they have a tool to more actively monitor their usage.



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One piece device that reads the meter

- Wireless communication between the meter/ERT and the device

Runs on A/C with a battery backup





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Assumptions

- Project duration 4 years
- System savings to apply to future rate adjustments.
- Rates effective October 2010
- Project Costs

Electric	\$10.10 million
Natural Gas	\$10.93 million
Water	<u>\$15.44 million</u>
Total	\$36.47 million
- Funding Scenarios
 - Scenario 1: Pay as you go
 - Scenario 2: Finance over 10 years
 - Scenario 3: Metering Business Unit



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Scenario 1: Pay As You Go

- Rate increase in effect 4 years.
- Annual Revenue Requirements

Electric	\$2.5 million
Natural Gas	\$2.7 million
Water	<u>\$3.9 million</u>
Total	\$9.1 million
- Approximate Residential Impact

Electric	\$1.90 / month
Natural Gas	\$1.90 / month
Water	\$3.40 / month



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Scenario 2: Finance over 10 years

- Smaller rate increase.
- Annual Revenue Requirements

Electric	\$1.1 million
Natural Gas	\$1.2 million
Water	<u>\$2.3 million</u>
Total	\$4.6 million
- Approximate Residential Impact

Electric	\$0.90 / month
Natural Gas	\$0.90 / month
Water	\$2.00 / month



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Scenario 3: Metering Business Unit

- SpringNet model
- Public Utility (Metering Division) funds and “owns” the system.
- 10 year financing
- Commodity business units pay monthly fees for meter information.
 - Charges assessed to recover system capital, operations and maintenance costs.
 - Reduces debt issuance costs.
 - Allows assignment of costs to commodity based on benefit.

- Residential Impact

Electric	\$2.60 / month
Natural Gas	\$0.40 / month
Water	\$0.60 / month



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